REMARKS

Claims 1-18 remain pending in this application for which applicants seek reconsideration.

Amendment

Claims 1 and 2 have been amended to improve its readability and form, and to clarify that the bias heater power supply is separate from the vaporization heater power supply, and that the container is taller than the bias heater to electrically isolate the bias heater from the vaporization heater. No new matter has been introduced.

Art Rejection

Since claims 1 and 2 have been clarified to recite that the bias and vaporization heater power supplies are separate, applicants submit that the first three art rejections based on Spahn (USP 6,237,529), Green (USP 5,584,935), Yamazaki (US App. 2001/0006827), Tanabe (US App. 2001/0008121), Takagi (USP 4,197,814), and Steube (USP 4,233,937) have been rendered moot. Applicants will therefore address only the rejections that rely on Soden (USP 5,532, 102) in combination with the above-identified references. Moreover, applicants will address only the rejection of the independent claims, as the dependent claims are believe to be allowable for the same reasons set forth with respect to the independent claims..

Independent claims 1 and 2 were rejected under 35 U.S.C. § 103(a) as unpatentable over Spahn in view of Green, Yamazaki, and Soden. Claims 1 and 2 both call for a bias heater, an electrically insulative container disposed in the bias heater, and a vaporization heater disposed on upper side walls of the container. The container is made taller than the bias heater to electrically isolate the bias heater from the vaporization heater so that separate power supplies can be provided for the bias heater and the vaporization heater. Applicants submit the examiner is attempting to pick and choose elements from the prior art in an attempt to recreate the claimed invention based on applicants' own teaching.

Spahn discloses a top plate 20 and a housing 10 made of metals with high electrical resistivity. Spahn specifically teaches heating BOTH the top plate 20 and the housing 10 by

passing a current through the top plate 20 and the housing 10 using a SINGLE power source. In Spahn, the temperature differences obtained in the top plate 20 (which causes vaporization due to radiative heating) and the housing 10 (which provides a bias heating) are accomplished through appropriate selection of the thickness dimensions of the top plate 20 and the housing 10 (column 8, lines 5-14). In Spahn, the housing 10 is not only used as the container for the material to be vaporized, but also serves as a heating element to heat the material to the desired bias heating level.

The present invention is specifically directed to overcome deficiencies associated with Spahn, for example, the difficulties in cleaning organic residue from the housing 10 of Spahn (page 3, lines 6-11 of the present application). The present invention solves this problem by providing a separate electrically insulative container 30 that can be cleaned without risk of damage. Since the container 30 cannot be resistively heated - -it being made of an electrically insulative material- -, a further solution was required in order to provide bias heating of the container.

The present invention solves this further problem by providing a separate bias heater 20, in addition to the vaporization heater 40, to provide bias heating of the material contained within the container 30. Both the vaporization heater 40 and the bias heater 20 are provided with separate power supplies to provide independent control. Accordingly, the bias heater 20 and the vaporization heater 40 must be electrically isolated from one another.

The present invention solves this additional problem by providing container side walls that are taller than the bias heater side walls. Accordingly, the vaporization heater 40 from the bias heater20 are spaced apart from one another and electrically isolated from one another. Independent control can therefore be accomplished to provide a separate bias heating temperature and a separate vaporization heating temperature.

In order for the examiner to prevail in maintain the rejection, it must be shown that three separate modifications of Spahn would be suggested by the references. Applicants submit that these modifications are not suggested by the art itself, but rather through the examiner's attempt to pick and choose elements from the prior art to arrive at the claimed invention.

First, the examiner states it would be obvious to replace the housing 10 of Spahn with the container 2 of Green. The examiner, however, fails to cite sufficient motivation, teaching or suggestion in either of the cited references that would lead one to this substitution. Why would one of ordinary skill in the art, faced with the cleaning problem addressed and solved by the claimed invention, look to replacing the housing 10 of Spahn with the container 2 of Green? There is simply no suggestion in either reference for doing so in order to address and solve the problem faced by applicants.

Second, even if one where led to utilize the container 2 of Green, there is no suggestion in either reference of utilizing two separate heaters with two separate power supplies to provide bias heating and vaporization heating. Both Green and Spahn are directed to the use of single power supplies. The examiner looks to Soden et al. as disclosing the use of two heaters and two power supplies, but Soden et al. specifically states "It is important, however, that the surface 47 be at either the **same temperature** as crucible 51 or at a temperature greater than that of the crucible 51 during the vacuum evaporation process. If the temperature of surface 47 falls below that of crucible 51, material 60 may condense on surface 47, which results in blockage of apertures 46.....In either event, however, the surface 47 is maintained at either the **same temperature** as crucible 51 or at a temperature greater..." (column 22, lines 32-49). Accordingly, since the surface 47 may be at the same temperature, it is clear that vaporization is occurring in the crucible 51, i.e., Soden et al. teaches nothing related to the use of separate bias and vaporization heating, but instead is only concerned with prevention condensation on the surface 47.

Third, even if one where to make the combination of the container 2 of Green and separate heaters and power supplies of Soden et al, the combination would still fail to yield the claimed invention, as none of the references of record discloses or suggests providing the size of the container walls as claimed. The sizing of the container walls permits isolation of the heating elements, thereby allowing independent control.

In view of the above, the examiner has clearly failed to establish a prima facie case of obviousness as required under 35 U.S.C. § 103. The combination of references proposed by the examiner is clearly not suggested by the references themselves, but instead, is based on an

attempt to pick and choose elements from the prior art without regard to the problems addressed and solved by the claimed invention and the differences in operation and functionality of the elements in the prior art. Further, even if properly combined, the references fail to disclose and suggest a specific element set forth in the claims.

Conclusion

Applicants submit that claims 1-18 patentably distinguish over the applied references and thus urge the examiner to issue an early Notice of Allowance. Should the examiner have any issues concerning this reply or any other outstanding issues remaining in this application, applicant urge the examiner to contact the undersigned to expedite prosecution.

Petition for Time Extension

Applicants request a two-month extension, from January 16, 2003 to March 17, 2003 (16th landing on Sunday), for replying to the outstanding Office Action. The two-monthextension fee is $410. The Commissioner is authorized to charge $410 (or any additional fees required to maintain the pendency of this application) to Deposit Account No. 18-2056.

Respectfully submitted,

Date: 03/17/03

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ATTACHMENT

MARKED UP VERSION

IN THE CLAIMS:

Claims 1 and 2 have been amended as follows:

--1. (Twice Amended) A thermal physical vapor deposition source for vaporizing solid organic materials and applying a vaporized organic material as a layer onto a surface of a structure in a chamber at reduced pressure in forming an organic light-emitting device (OLED), comprising:

a) a bias heater defined by side walls and a bottom wall, the side walls having a height dimension H_B;

b) an electrically insulative container disposed in the bias heater[, the container] for receiving vaporizable solid organic material[which can be vaporized], the container being defined by side walls and a bottom wall, and the container side walls having a height dimension H_C which is greater than the height dimension H_B of the bias heater side walls;

c) a vaporization heater disposed on upper side wall surfaces of the container, the vaporization heater defining a vapor efflux slit aperture extending into the container for permitting vaporized organic material to pass through the slit aperture and onto the surface of the structure, wherein the container side walls are taller than the bias heater side walls to electrically isolate the vaporization heater from the bias heater;

d) a bias heater power supply for applying an electrical potential to the bias heater to cause bias heat to be applied to the solid organic material in the container, the bias heater providing a controlled bias temperature which is insufficient to cause the solid organic material to vaporize;

e) a vaporization heater power supply for applying an electrical potential to the vaporization heater to [cause vaporization heat to be applied to]controllably heat uppermost portions of the solid organic material in the container [causing such uppermost portions] to vaporize the solid organic material and allow [so that] vaporized organic material [is]to project[ed] onto the structure through the efflux slit aperture to provide an organic layer on the structure, wherein the vaporization heater power supply is separate from the bias heater power source; and

f) means for providing relative motion between the vapor deposition source and the structure to provide a substantially uniform organic layer on the structure.

2. (Twice Amended) A thermal physical vapor deposition source for vaporizing solid organic materials and applying a vaporized organic material as a layer onto a surface of a structure in a chamber at reduced pressure in forming an organic light-emitting device (OLED), comprising:

a) a bias heater defined by side walls and a bottom wall, the side walls having a height dimension H_B;

b) an electrically insulative container disposed in the bias heater[, the container]for receiving vaporizable solid organic material[which can be vaporized], the container being defined by side walls and a bottom wall, and the container side walls having a height dimension H_C which is [greater]taller than the height dimension H_B of the bias heater side walls;

c) a vaporization heater disposed on upper side wall surfaces of the container, the vaporization heater defining a vapor efflux slit aperture extending into the container for permitting vaporized organic material to pass through the slit aperture and onto the surface of the structure, wherein the container side walls are taller than the bias heater side walls to electrically isolate the vaporization heater from the bias heater;

d) a bias heater power supply for controllably applying an electrical potential to the bias heater in response to a control signal provided by a bias heater temperature measuring device to cause controlled bias heat to be applied to the solid organic material in the container, the controlled bias heat providing a bias temperature which is insufficient to cause the solid organic material to vaporize;

e) a vaporization heater power supply for controllably applying an electrical potential to the vaporization heater in response to a control signal provided by a deposition rate-measuring device to cause controlled vaporization heat to be applied to uppermost portions of the solid organic material in the container, causing such uppermost portions to controllably vaporize so that vaporized organic material is projected onto the structure through the efflux slit aperture to

provide an organic layer on the structure, wherein the vaporization heater power supply is separate from the bias heater power supply; and

f) means for providing relative motion between the vapor deposition source and the structure to provide a substantially uniform organic layer on the structure.--